

The Effectiveness of using Mind Mapping Strategy and Making Inference toward Students' Vocabulary Achievement

Syafrizalsyafrizal¹, Umi Ida Fitriani², Nurhaedagailea³

¹Associate Professor at Sultan Ageng Tirtayasa University, Indonesia

syafrizal@untirta.ac.id

²Postgraduate students at Sultan Ageng Tirtayasa University, Indonesia

Adamuif68@gmail.com

³Associate Professor at Sultan Ageng Tirtayasa University, Indonesia

ida_gailea@yahoo.co.id

Abstract— This study attempted to explore the effectiveness of mind mapping (MM) strategy and making inference (MI) toward student vocabulary achievement. In order to fulfill this purpose, thirty of seventh grade students were participated as samples and quasi experimental research treatment by level 2x2 applied as research method. In implementing the method, MM and ordinary learning strategy are assigned as independent variables. Moreover, MI, vocabulary score of students in pretest and posttest were assigned as moderator variable, covariate and dependent variable respectively in this study. By using AN COVA to analyze the research data with 5% significance level, it concluded that mind mapping strategy revealed statistically significant effect with sig. value is 0.01 and 24% of size effect, while the interaction between groups of learning strategy and MI groups was concluded not significant enough, with sig. value is 0.732 and 0.5% effect size. Although the interaction effect in groups wasn't significant, this study could serve as an important step to develop vocabulary learning strategy in the classroom by implementing MM strategy. And respecting to several studies on the same topic have shown the similar results, researcher considers several improvements in the number of samples, pre-treatment exercises and more appropriate instrument selection of MI, in near future research.

Keywords—Making Inference; Mind Mapping; Vocabulary Achievement.

I. INTRODUCTION

Background of Problem

The development of English language proficiency in Indonesia as reported annually by *English First English Proficiency Index* (EF EPI) hasn't shown a significant

improvement since it was first reported in 2011. The value of EPI in Indonesia was 44.78, and it is classified as very low proficiency category. Even six years later in 2017, the value still showed small increment 52.15, and it is classified as a low proficiency category, based on data that is taken from EF EPI(2017, pp. 6-7).

The condition of such slow development on students' vocabulary is in line to what Read (2000, p. 83) addressed that the English vocabulary knowledge of first-year university students in Indonesia have been found that they typically fell well short of the target, even after six years of high school study. Read informed the first research that has been done by Quinn in 1968 made an estimate of less than 1,000 words, whereas thirty years later Nurweni and Read in 1999 produced figure of about 1,200 words on average(Nurweni & Read, 1999).

Having personally observed the vocabulary learning conditions in a high school, researcher discovers several factors leading to the occurrence of low vocabularies of students, namely; (1) lack of reading interest from students, (2) lack of motivation to learn English, (3) limitation number of hours to teach English in the classroom, (4) involving the vocabulary learning in the English lesson, (5) inappropriate vocabulary learning strategy, and (6) lack of students involving in learning English.

Furthermore, in order to contribute a solution to the above problems researcher conducted a research to implement vocabulary learning strategy by using combining teacher-centered and student-centered mind mapping. This strategy becomes as an independent variable and the treatment for the experimental class, while the controlled

class accepted the ordinary strategy, by using note taking and remembering the vocabularies.

With respect to several studies on the same topic, it was found that application of mind mapping as teaching and learning strategy could enhance learning and critical thinking skill of students (Santiago, 2011, p. 129). Considering this finding, researcher will utilize critical thinking of students as a moderator variable to demonstrate whether the level of student's critical thinking will affect or not the improvement of the student's vocabulary.

Objective of the Research

The objectives of this research are the followings; (1) to measure the effectivity of application combining teacher-centered and student-centered mind mapping strategy toward vocabulary achievement, (2) to evaluate whether high level MI of students will get a higher vocabulary score by the application of mind mapping strategy, (3) to evaluate whether low level MI students will get a higher vocabulary score by the application of mind mapping strategy, (4) to measure interaction between mind mapping learning strategy with the MI of students toward of English vocabulary achievement.

II. LITERATURE REVIEW

Vocabulary

The definition of vocabulary according to Read (2000, p. 16) is an inventory of individual words, with their associated meanings. Vocabulary also refers to all the words in a language, the teaching vocabulary entire vocabulary of a language (Barcroft, Sunderman, & Schmitt, 2011, p. 571).

The words are described and categorized in several ways as mentioned by Thornbury (2002, pp. 3-9) such as; word classes, word families, word formation, affixation, multi-word unit, collocations, homonyms, polysemy, synonyms, antonyms, and hyponyms.

Mind Mapping Teaching and Learning Strategy

In this study researcher attempts to combine teacher-centered and student-centered mind mapping which aims to create an interesting teaching and learning strategy that expected will enhance students' memory rehearsal, organizing the words, creating thinking, and increasing concentrating of students (Buzan, 2003, p. 4). By application of combining teacher-centered and student-centered mind mapping, researchers expect that students will involve in vocabulary learning actively, it will increase student motivation to achieve the goal of this study.

Making Inference of Student

The definition of inference was stated by Facione (1990, p. 9) as skill to identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to deduce the consequences flowing from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation. Facione was divided the inference in three sub-skill area, those are; querying evidence, conjecturing alternatives, drawing conclusions.

A statement of expert consensus for purpose of educational assessment and instruction or called as *The Delphi Report* mentioned that inference as one of the cognitive aspect of critical thinking (CT). The experts find CT to include cognitive skills in; (1) interpretation, (2) analysis, (3) evaluation, (4) inference, (5) explanation and (6) self-regulation. Each of these six is at the core of CT. Associated with each are criteria by which its execution can be meaningfully evaluated, (Facione P., 1990, p. 4).

In order to mapping the levels of students' MI, researcher was used The Cornell Class-Reasoning Test Form X. This test covered of class-reasoning as an aspect of CT. The test consists of sentence logic, class logic, ordinal logic and other type of logic.

III. RESEARCH METHODOLOGY

Site and Schedule of Research

The implementation of quasi-experimental research is conducted at SMP Peradaban that located at Panggung Jati Village, Taktakan sub-district, Serang city, Banten province. The total schedule of the research from proposal to research report is 23 weeks, start from Jan 12nd, 2018 up to Jun 30th, 2018.

Method

This research implemented the quasi experimental design of treatment by 2x2 levels. The research design presented schematically, in the table 1.

Population and Sample

The population of this quasi-experiment research are students of grade seventh of SMP Peradaban. The seventh grade as the object of research is composed of two classes, therefore all population was treated as sample of the research without re-arranged the existing classes. The experimental class and control class will be selected randomly between both classes. The number of samples from this research as mentioned in table 1.

Table.1: Treatment by 2x2 Level Designs

Making Inference of Student (B)	Teaching and Learning Strategy(A)			
	OM (A ₁)		MM (A ₂)	
	Group	No of Sample	Group	No. of Sample
High (B ₁)	A1B1	7	A2B1	7
Low (B ₂)	A1B2	8	A2B2	8

Where:

- OM is teaching and learning vocabulary by ordinary strategy
- MM is teaching and learning vocabulary by mind mapping strategy

Data Collecting Technique

The Vocabulary Test (The Instrument of dependent Variable)

The Vocabulary test is a measurement of the learning received during the research period focused in vocabulary score as a result of comparing what the researcher knew before in a pre-test and after the research treatment in a post-test. The vocabulary test consists of fifty items using multiple choice questions. The form of questions was designed as followings; (1) defining and describing things, animals, people, professions, activities, public buildings, sign and instruction boards, and time, (2) to complete the missing words in the sentences, (3) rearrange the random words into correct sentences, (4) declarative and interrogative sentences in simple present tense. The questions are made based on material course book namely Fun with English 1 and other several resources.

The Cornell Class-Reasoning Test-Form X (The Instrument of Moderator Variable)

The Cornell Class-Reasoning Test Form X is standardized making inference assessment tool, which was developed by Ennis et al. in 1964, contains seventy two multiple choice items that designed for use with any of grades with concerned from fourth grade to twelfth grade.

The first six items are sample items in each test. Items seven through seventy eight in each test are divided in two parts, the first part contains the item groups for the six easiest forms, as determined in the tryouts. The second part contains the item groups for the more difficult forms. Considering the timing of the test and the students' ability to answer the MI test, only the first thirty-six items as the first part contains the items groups for the six easiest forms are used as MI instrument test.

Testing Validity and Reliability measurement

There are two kinds of testing validity, namely external validity and internal validity have been done. The external validity refers to the relationship between scores

obtained using the instrument and scores obtained using one or more other instruments or measures that often called a criterion (Fraenkel, Wallen, & Hyun, 2012, p. 148). The formula of correlation was designed by Pearson, known as *Product Moment correlation formula* was used to calculate external validity. While, internal validity consist of several test, as the followings; 1) difficulty level of item (facility value) is defined simply as the proportion of test takers who answer an item correctly, 2) item discrimination analysis, the most commonly used method of calculating item discrimination is the point bi-serial correlation, and 3) distractor evaluation.

To measure reliability coefficient, researcher used the Spearman-Brown prophecy formula which is known as Split-half Procedure. The split-half procedure involves scoring two halves (odd items versus even items) of a test separately for each person and then calculating a correlation coefficient for the two sets of scores. The coefficient indicates the degree to which the two halves of the test provide the same results and hence describes the internal consistency of the test.

Data Analysis Technique

This research implemented the two-way ANCOVA (analysis of covariance) from the SPSS program as a data analysis technique. ANCOVA is an extension of analysis of variance (ANOVA) that allows to explore differences between groups while statistically controlling for an additional variable is called a covariate is variable that suspect may be influencing scores on the dependent variable (Pallant, 2011, p. 297).

The Assumptions of ANCOVA

There are a number of issues and assumptions associated with ANCOVA, such as; (a) normality, (b) homogeneity of variances, (c) measurement of the covariate, (d) reliability of covariate, (e) linearity (Pallant, 2011, pp. 299-300).

IV. RESULT AND DISCUSSION

Data Description

The data were analyzed to identify, describe and explore the relationship between mind mapping strategy and making inference of student toward student's vocabulary achievement. They were obtained from pretest held on March 19th, 2018 and posttest held on May 2nd, 2018. The

followings chart described increasing vocabulary scores between pretest and posttest in experimental class (A1), controlled class (A2), high level MI class (B1), and low level MI class (B1).

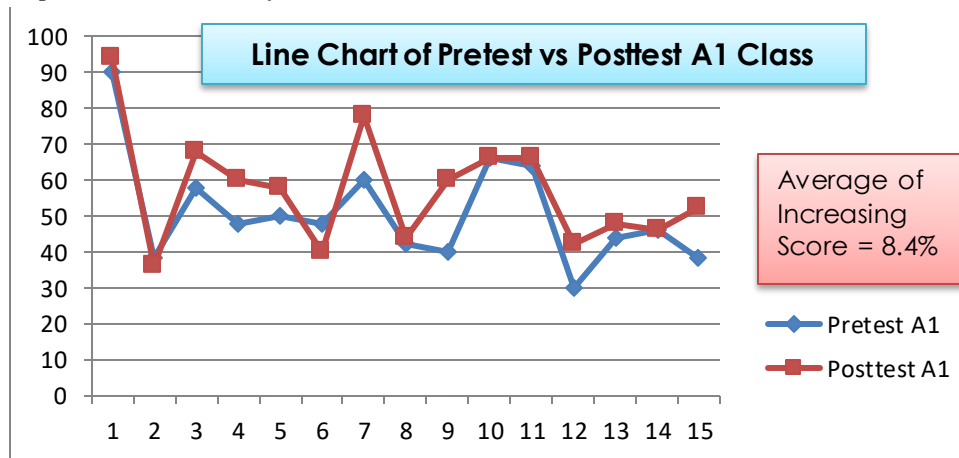


Fig.1: Line Chart of Pretest vs Posttest score of A1 Class

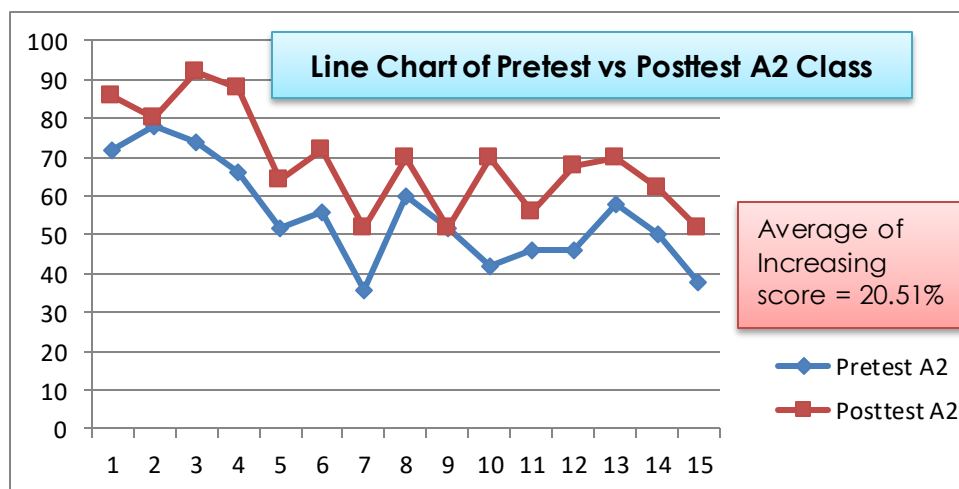


Fig.2: Line Chart of Pretest vs Posttest score of A2 Class

The line charts mentioned at figure 3 and 4 presented an increasing of score of A1 and A2 classes. It is clear the increasing score involved 93% of the students in the A2 class, 73.33% in the A1 class, and the percentage of average increasing scores is 20.51% in A2 class and 8.4% in A1 class.

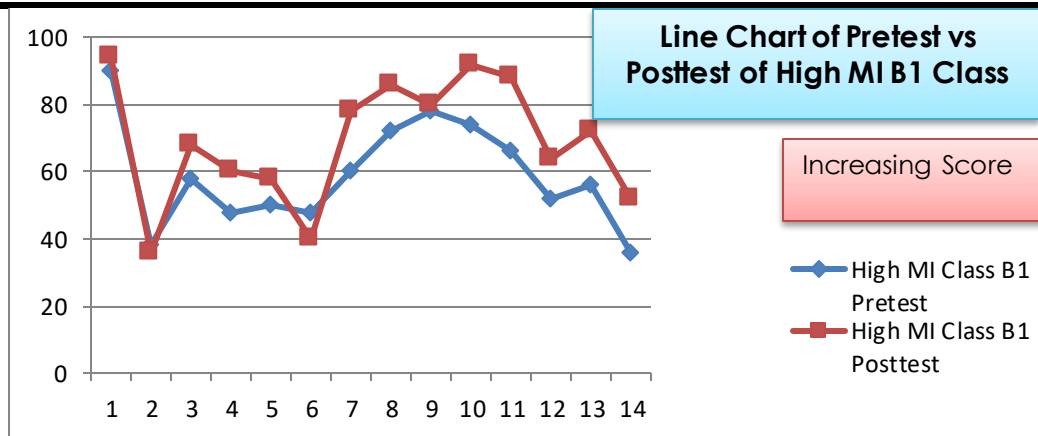


Fig.3: Line Chart of Pretest vs Posttest Score of High MI B1 Class

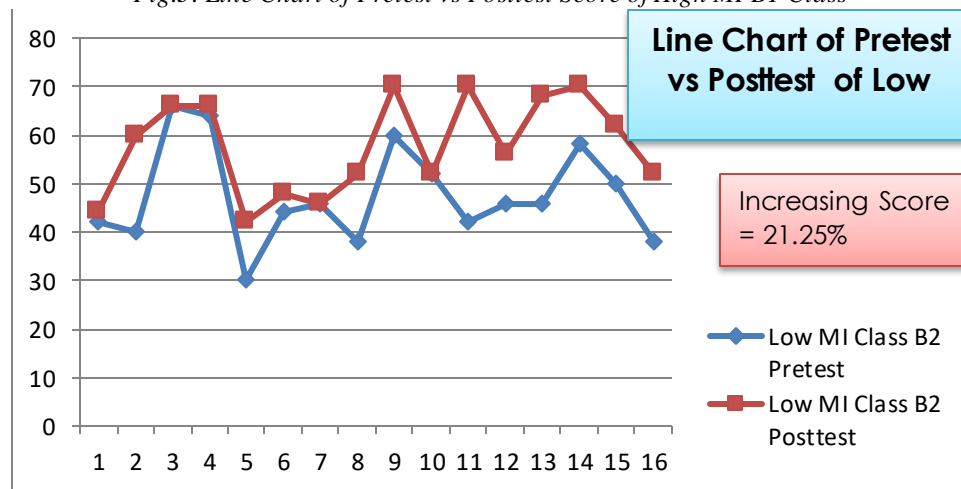


Fig.4: Line Chart of Pretest vs Posttest Score of Low MI B2 Class

The line charts mentioned at figure 3 and 4 presented an increasing of score of B1 and B2 classes. It is clear the increasing score involved 86% of the students in the B1 class, 81.25% in the B2 class, and the percentage of average increasing scores is 17.2% in B1 class and 21.25% in B2 class. The description revealed that B2 class gained a higher score compared to B1 class, showing opposite results from the researcher's expectations.

Analysis Testing Requirement

Normality

The normality data test conducted using SPSS program, within two methods of assessing normality by graphically and numerically for several data i.e. a) pretest

score of A1 class, b) pretest score of A2 class, c) posttest score of A1 class, d) posttest score of A2 class, e) pretest score of B1 class, f) pretest score of B2 class, g) posttest score of B1 class, and h) posttest score of B2 class. All data have been tested and resulting the normally distributed data.

Homogeneity of the Variances

Parametric techniques need assumption that samples are obtained from populations of equal variances. The test result of homogeneity of variances was taken from SPSS's output, namely; *Levene's test for homogeneity of variances* as part of the T-Test and analysis of variance as figured in the following.

Levene's Test of Equality of Error Variances^a

Dependent Variable: PosttestScore

F	df1	df2	Sig.
.485	3	26	.696

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Pretest Score + Learning Method + Making Inference + Learning Method * Making Inference

Fig.5: Output Data of ANCOVA: Levene's Test of Equality

The above figure mentioned the significant value is $0.696 > 0.05$, obtained that variances for the two groups are equal.

Measurement of the Covariate

In this research, the covariate is pretest of student's vocabulary it has been measured on March 19th, 2018, prior conduction the treatment for experimental class.

Reliability of the Covariate

The result of reliability calculation $r_{1/2}$ is 0.81, and r_{11} is 0.89, that is categorized as high reliability.

Linearity

ANCOVA assumes that the relationship between the dependent variable and the covariate is linear (straight-line). Violations of this assumption are likely to reduce the power (sensitivity) of the test. This would violate the purpose of inserting the covariate, which is to increase the

strength of the test variance analysis. Scatterplots was used to test for linearity.

Hypothesis Testing

In order to perform the hypotheses testing, researcher running the Two Way ANCOVA program from SPSS. All the assumption and requirement of ANCOVA have been tested and the results were found no violation of the assumptions.

The Output Data of ANCOVA

The output ANCOVA namely; *The Test between Subject Effects* is used for testing the statistical hypotheses. They were the main ANCOVA results, the table describes a significant main effect for independent variables and whether the interaction between these two variables is significant.

Tests of Between-Subjects Effects									
Dependent Variable: Posttest Score									
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta	Noncent. Parameter	Observed Power ^b
Corrected Model	5406.566 ^a	4	1351.641	22.359	.000	.782		89.436	1.000
Intercept	450.285	1	450.285	7.449	.011	.230		7.449	.746
Pretest Score	3362.128	1	3362.128	55.616	.000	.690		55.616	1.000
Learning Method	475.678	1	475.678	7.869	.010	.239		7.869	.769
Making Inference	14.788	1	14.788	.245	.625	.010		.245	.076
Learning Method * Making Inference	7.241	1	7.241	.120	.732	.005		.120	.063
Error	1511.301	25	60.452						
Total	126240.000	30							
Corrected Total	6917.867	29							
a. R Squared = .782 (Adjusted R Squared = .747)									
a. Computed using alpha = .05									

Fig.6: Output Data of ANCOVA: The Test of Between-Subject Effects

The result of ANCONA analysis was summarized as the followings; there was a significant main effect of learning method. $F(1, 29) = 7.9$, $p < 0.05$, with a large effect size (partial eta squared = 0.24). But there wasn't a significant main effect of making inference of student, $F(1, 29) = 0.245$, $p > 0.05$, with small effect size (partial eta squared =

0.01). And also there wasn't a significant interaction effect between learning method versus making inference of student, $F(1, 29)$, $p > 0.05$, with small effect size (partial eta squared = 0.005).

Hypothesis Testing

1st Hypothesis:

$$H_0 : \mu'_{a2} \leq \mu'_{a1} \text{ and } H_a : \mu'_{a2} > \mu'_{a1}$$

Dealing with the output of ANCOVA that obtained in figure 7, the significant value of learning method is 0.01 less than 0.05, it indicated there was a statistically significant difference between mind mapping and ordinary strategies. So null hypothesis H_0 is rejected and H_a is accepted. The partial eta squared is 0.24, it indicated 24% of the variances in the dependent variable (posttest score) is explained by the independent variables.

2nd Hypothesis and 3rd Hypothesis

$$H_0 : \mu'_{a2.b1} \leq \mu'_{a1.b1} \text{ and } H_a : \mu'_{a2.b1} > \mu'_{a1.b1}$$

$$H_0 : \mu'_{a2.b2} \leq \mu'_{a1.b2} \text{ and } H_a : \mu'_{a2.b2} > \mu'_{a1.b2}$$

The significant value of interaction between learning strategy versus making inference is 0.625 higher than 0.05, it indicated there isn't a statistically significant difference in groups effect. So null hypothesis H_0 is accepted and H_a is rejected. The partial eta squared is 0.01, it indicated only 1% of the variance in the dependent variable is explained by the group effect.

4th Hypothesis

$$H_0 : \rho_{a.b} = 0 (\text{Interaction between } A \times B = 0)$$

$$H_a : \rho_{a.b} \neq 0 (\text{There is interaction between } A \times B)$$

The significant value of interaction between learning strategy versus making inference is 0.732 higher than 0.05, it indicated there wasn't a statistically significant difference in groups effect. So null hypothesis H_0 is accepted and H_a is rejected. The partial eta squared is 0.005,

it indicated only 0.5% of the variance in the dependent variable is explained by the groups effect.

Discussion

Considering the results is mentioned at above, researcher invites other researchers, observers, and educators who may have concern in improvement of education research to discuss the findings of this research, with the following topics; firstly, the mind mapping learning method showed a significant effect to increase vocabulary score, with the size of effect is 24%, this finding lead to the first topic of discussion, that is "how mind map can contribute the significant effect on students' vocabulary improving?"; secondly, the making inference of student wasn't have significant effect to improve vocabulary score of student, this finding lead to second discussion, that is "why making inference of student has no significant effect on the increase of vocabulary student?"

"How mind map can contribute the significant effect on students' vocabulary improving?"

The mind mapping strategy practically have adopted the three stages of the effective vocabulary teaching that stated by Nation (2005, pp. 4-5), when researcher introducing the topic 'describing wild animals' the first step is asking the student to explore the word; 'describe', 'wild', and 'animal', define the word meaning, form, taught how to pronounce the word, what kind the animals can be categorized as wild animals and how to describe the characteristic of each wild animal. Finally, researcher asked students to create their own mind mapping. Amazingly, seeing how the students learn very fast by this strategy. The following is photograph of their first mind mapping.



Fig.7: Mind Map of Describing Wild Animal Created by Students

Additionally, the use of mind mapping strategy not only being an effective technique for teaching and learning vocabulary, but also one of the learning tools that is easy and fun for students and could enhance their creativity by involving not only writing but also images and creativity. At the end of this research program, the students have asked to give their impression of the research program, here are the summary of their impression; 1) The students respond to the question; “Do you think learning with mind mapping will improve your creativity?” Almost all students give the positive respond, 93% of students feel sure and very sure that mind mapping strategy could improve their creativity and only 7% of student is neutral, as described in figure 8, 2) The other responds of the question; “Do you agree that learning with the mind map method is easy and fun?” described in below figure 9.

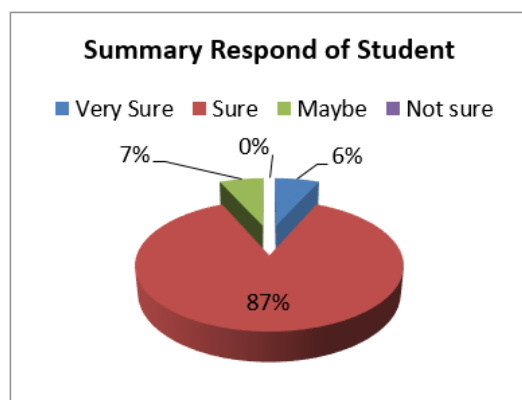


Fig.8: Students' Respond to the Question of "Creatively"

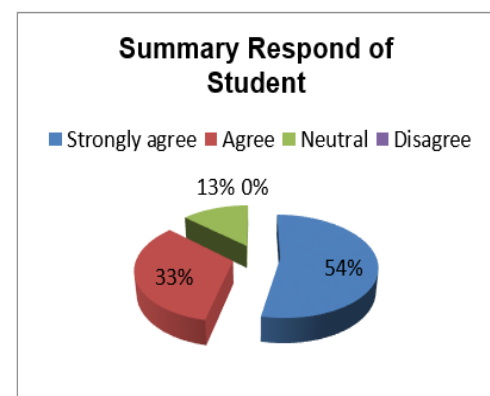


Fig.9: Students' Respond to the Question of "Easy and Fun"

There are 54% of students strongly agree that mind mapping is easy and fun learning method, 33% of students are agree and only 13% respond neutral to the question. Above figures reflected the condition that student really exciting learning by using mind mapping.

“Why Making Inference of Students has no Significant Effect on the Increase of Vocabulary Score of Student?”

The result of MI test obtained in the controlled and experimental class have almost similar in average of scores, 44.33 by 44.6, however the distribution of the scores have similarity figure. In fact the vocabulary score did not follow

the same pattern as the MI's score. Even students with high MI's score, did get lower score than student with low MI

scores, as shown by graphics in figure 10 and 11 below. The similar conditions have shown in both classes.

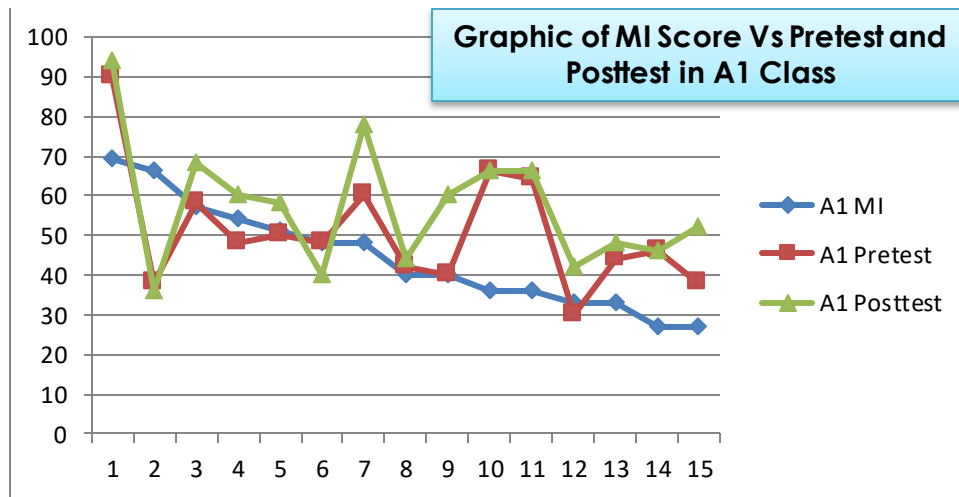


Fig.10: Graphic of MI Score versus Pretest and Posttest in A1 Class

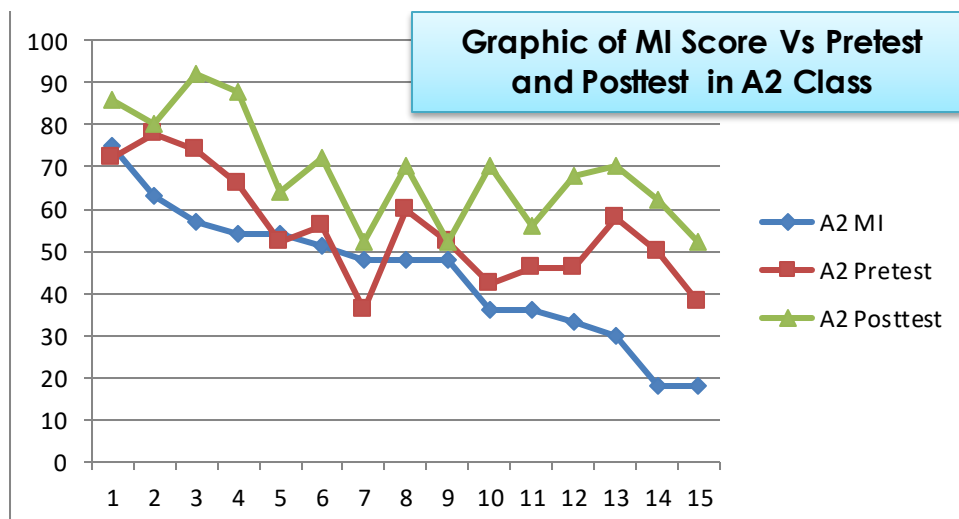


Fig.11: Graphic of MI Score versus Pretest and Posttest in A2 Class

It was recorded a few number of researches have been conducted to analyze the effect of interaction between mind mapping and critical thinking, researcher noted there are two studies in this focus, although with different dependent variable refer to different outcomes. The following is a summary of relevant research in this focus; 1) D'Antoni(2009), in his research, entitled "Relationship between the Mind Map Learning Strategy and Critical Thinking in Medical Students" revealed no significant differences in mean scores of both test pretest and posttest between mind mapping and standard note taking groups, 2) Bixler et al.(2016) in their research, entitled "Collaborative Concept Mapping and Critical Thinking in Fourth-Year Medical Students" revealed that the concept map is a valid

mechanism to teach content knowledge, although, the difference in the CT Test scores was not significant. These two studies illustrate that although there is an increase in the score of dependent variables, but not statistically significant.

There are several allegations that underlie the findings. Firstly, potential threats from existing confounding variables such as the characteristics of learners. The experimental class (A2) consisting of students with logical, musical, and kinesthetic intelligence, while the controlled class (A1) consisting of students with linguistic intelligence, visual-spatial, and natural. By this separation may affect to result of making inference and vocabulary test.

Secondly, the history of student that is uncontrolled events that occur during the study, and may be able to influence the variables under study. In this study, some of students taken regular course when they were as elementary students, some of them also using you tube as media to learn English. This condition may affect to their vocabulary test score, even though they are not classified as linguistic intelligence students.

Thirdly, the utilization of the Cornell-Reasoning Test Form-X, as instrument test of MI. This instrument test consists of only one aspect of the inference measurement in MI. The other aspects, such as; querying evidence and conjecturing alternatives were absence, such situation may affect to measure all aspect in making inference of students. The next study shall be considered to involve the all aspect of MI.

The last issue is student's experience in MI test. Based on students' confirmation prior taking the MI test, they admitted that have never taken MI or similar test before. This issue may have influence to their MI score. The next study shall be considered to conduct drilling test prior starting the research.

Conclusion

Firstly, the mind mapping teaching and learning method showed a statistically significant effect to increase vocabulary score of students, with the size of effect is 24%, that means 24% of the variance in the dependent variable is explained by the independent variable. The value according to Tabachnick and Fidell is categorized as 'large effect size' (Pallant, 2011, p. 210). This significant result indicates that mind mapping can be one of the most effective strategy, because it can adapt the vocabulary learning strategies that stated by several experts, such as; Nation (2005, pp. 4-5) and Schmitt (2000, p. 122), in addition to learning with mind mapping can improve student creativity and become one of the fun and easy learning strategy.

Secondly, by reading descriptive data, the average of vocabulary score increasing of student high level MI in controlled class (A1B1) is 10.71%, while the experimental class (A2B1) is 23%. The data roughly show that the average of vocabulary score increasing in A2 class is higher than the A1 class, but this increase is not statistically significant according to the output data from the ANCOVA, it is caused by other factors, such as; additional treatment by using mind mapping strategy, and other factors that should be investigated further.

Thirdly, similarly as high level groups, the low level group of MI students in experimental class (A1B2), got higher increasing average vocabulary score than control

class (A2B2), they got scoring 27.55% by 14.59%, but not significant enough.

The last conclusion, the output of ANCOVA analysis showed that the interaction between learning method and making inference of students is not significant, which means although there is an increase of vocabulary score of students, it does not revealed any interaction between the two independent variables.

Suggestion

The researcher hopes by using mind mapping in teaching vocabulary will be useful for the teachers, the students and the other researchers, to them this suggestions are addressed.

For the teachers

The result of this study can support the English teachers to apply this strategy in teaching vocabulary and teachers will get one of the more fun alternative methods that can improve the creativity of students, rather than the ordinary method that has been applied in the classroom.

For the Students

The result of this study can motivate the students to improve their vocabulary skills. Vocabulary learning using mind mapping strategy in addition is attracting and enhancing their creativity, facilitate them in making an easy note taking, recalling the memorized vocabulary by making the words association in word families, synonyms and antonyms, can improve their concentration and save their time.

For the Researcher

The mind mapping strategy succeeded in increasing the vocabulary score of students significantly, with the size effect is 24%, it shows a large size effect. Since this figure showed 24% in effect size, then there are still 76% other factors that will contribute to the fully success of this study, while making inference (MI) as a moderator variable only contributes 1% effect size, a very small figure. Looking back at the result of previous studies in the same area, that have discussed in chapter two, which mind mapping as single variable gave the large effect toward improving vocabulary score of students. In this case, researcher will describe how CT as an umbrella of MI, as a single variable contributing to the success of improving the English skill, as indicated in the following researches; 1) Syafrizal and Samanhudi (2016, p. 37) in their research entitled 'Designing an EFL Speaking Class with a View to Critical Thinking Development' have prepared an syllabus to combine learning material using both English speaking and CT, 2) Juniardi (2016, p. 72) in his research entitled 'ESL Students' Critical Thinking and their Academic Writing Skill' mentioned a positive correlation between

students' CT and students' academic writing ability with correlation coefficient 0.58, value of T statistic 11.28, and level of significant is 0.95, 3) Mohammadi et al. (2012, pp. 197-198) in their research entitled 'The Relationship between Critical Thinking Ability and Reading Strategies Used by Iranian EFL Learners' mentioned the positive relationship between CT and reading strategies with correlation coefficient is 0.413 and T test significant is 0.03. All the researches of relationship between CT of student and ability of their ESL's skills indicated the positive results.

Based on the positive results of the previous researches in the topic of mind mapping and critical thinking separately, researcher recommends to bringing this combination topic in the next research. Even though the result of this study based on ANCOVA analysis didn't show significant interaction, but there are increasing in vocabulary score of students in experimental class. This situation indicated a positive influence to lead into true experimental research, with some improvements should be considered in following aspects; 1) wider selection of samples, 2) preparation of the vocabulary test instrument, 3) involving the three aspects of MI, or the addition of other aspect of CT, which provide a broader range of variables, 4) taking into consideration time for research preparation by adding preliminary test prior conducting pretest for both of variables.

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